SPECTROSCOPIA MOLECULAR

Un bulletin mensual de novas e informationes de interesse e valor al spectroscopistas molecular

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LE SYMPOSIO OHIO STATE

LE none symposio annual super Structura Molecular e Spectroscopia esseva tenite al universitate Ohio State in Columbus, Ohio, Statos Unite, ab le 14 al 18 de junio 1954. Le numero que se registrava a iste symposio esseva 480, le plus grande numero de alicun anno depois le commenciamento de iste symposios. Representantes de multe paises esseva presente.

Le numero de discursos esseva 121. Illos esseva super spectros de bandas electronic, theoria de bandas infrarubie, spectroscopia Raman, spectroscopia del stato solide electronic, spectros infrarubie, spectros microundic, spectroscopia de alte resolution, transferentia de datos infrarubie e themas affin, instrumentation infrarubie, e un discussion super le technica que es le plus efficace pro le solution de un problema industrial.

Al vespera de lunedi, il habeva un discussion informal super symbolos e nomenclatura spectroscopic, ducite per professor R. S. Mulliken, chef de un committee super nomenclatura del Commission Juncte de Spectroscopia.

Le dinar del symposio esseva al vespera de mercuridi. Hic Dr. Wallace Brode parlava super le thema, "Barnum habeva ration". (Barnum habeva dicite que un imbecille nasce cata minuta.) Dr. Brode dava exemplos del misuso del scientia pro objectivos financiari per pseudo-scientistas. Isto esseva al primo amusante, tunc alarmante, proque il es le mesme gente qui es defraudate in iste maniera qui in un grande mesura establi le conditiones que affecta le avantiamento del scientia. Si illes non ha le cognoscentia e le intelligentia de evitar tal pseudo-productos, como pote illes determinar sage conditiones le quales permittera le melior avantiamento del scientia?

Al vespera de jovedi, il habeva un session convocate per le Committee Infrarubie appunctate al symposio in 1953. Iste committee recommendava le formation de un Societate Infrarubie pro melio servir le necessitates de spectroscopistas in iste campo. Multes de illes presente sentiva que le societate debe includer un campo plus extendite e que le nomine debe esser Societate de Spectroscopia Molecular. Sed le committee e un grande numero de illes presente sentiva que al primo il esserea plus sage concentrar se super le problemas del spectroscopia infrarubie. Le committee esseva reappunctate, con alicun nove membros, e esseva instruite a proceder con le formation de un tal societate. Il pare que le nomine del societate essera le Societate Infrarubie e que illo essera limitate al primo a problemas infra le infrarubio. Le chef del committee es Dr. R. A. Oetjen. Illes qui ha questiones o proponimentos debe scriber a Dr. Oetjen al Departimento de Physica, Universitate Ohio State, Columbus 10, Ohio, Statos Unite.

Inter le multe discursos interessante esseva illo de Dr. H. L. Welsh super le spectros Raman de gases, illo de Dr. C. H. Townes super disveloppamentos recente in spectroscopia microundic, e illos de Drs. Dennison e Herman super intensitates.

OMNE disveloppamento e affinamento intellectual non es de valor si illo non es accompaniate per le crescimento de un character multo integrate. Un tal integration es le plus facilemente attingite per le adoption de alicun fin o objectivo in le vita le qual pare suprememente valorose, per le influentia de un objectivo principal le qual pote subordinar omne objectivos minor e convoca in su servicio toto le energias del personalitate.

-- WILLIAM McDOUGALL,
The Energies of Men (Le Energias del Homines).

TRACTAMENTOS DEL COORDINATAS NORMAL DE MOLECULAS POLYATOMIC

Salvador M. Ferigle e Alfons Weber
Instituto Technologic de Illinois, Chicago 16, Illinois
(continuate ab Spec. Mol. 3, 40, 1954)

4.3 Coordinatas de Symmetria. Quando le function arbitrari F del previe section es un coordinata de displaciamento, le functiones f_i^j (le quales pertine al lineas differente del representationes irreducibile) obtenite ab F es appellate coordinatas de symmetria. Un coordinata de symmetria es representate per s_{ki}^j; le superscripto j e le subscripto i ha le mesme signification como in le previe section, i. e. j indica le representation irreducibile e i indica le linea al qual le coordinata de symmetria pertine. Le subscripto k es usate pro differentiar le collection de coordinatas de symmetria formate per omne le s_{ki}^j ($i = 1, 2, \ldots, l_j$) ab altere collectiones que pertine al mesme representation irreducibile. Le formulas de section 4.2 es applicabile in un maniera directe a nostre problema, como ha essite monstrate per Nielsen e Berryman[10].

Pro applicar Eq. 60, il es necessari que on cognosce le resultato del operation R super le function arbitrari F, o in altere parolas, le proprietates de transformation del coordinatas de displaciamento sub le operationes de symmetria. Pro le typo de coordinatas de symmetria con le quales nos ha essite concernite hic, isto ha essite facite per Tobin[19]

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[19] M. C. Tobin, J. Chem. Phys. 20, 1980 (1952).

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per un consideration del vectores s date per differente autores (vide section 3.32). Nos va applicar iste technicas general a alicun modellos molecular particular.

4.31 Coordinatas de Symmetria pro le Molecula Non-Linear XY_2. Lassa nos considerar le molecula non-linear XY_2 monstrate in Fig. 1 de section 3.11. Le transformationes del cordinatas interne Δy_1, Δy_2, e Δy_1y_2 sub le operationes del gruppo C_{2v} al qual le molecula pertine es date in Tablula VI.

TABULA VI. Transformationes del coordinatas interne del molecula non-linear XY_2 per le operationes del gruppo C_{2v}.

	I	C_2	σ_v	σ_h
Δy_1	Δy_1	Δy_2	Δy_2	Δy_1
Δy_2	Δy_2	Δy_1	Δy_1	Δy_2
Δy_1y_2	Δy_1y_2	Δy_1y_2	Δy_1y_2	Δy_1y_2

Proque omne le representationes irreducibile del gruppo C_{2v} es unidimensional, illos es justo le characteres le quales es date in Tabula VII.

TABULA VII. Characteres pro le gruppo punctal C_{2v}.

C_{2v}	I	C_2	σ_v	σ_h
a_1	1	1	1	1
a_2	1	1	-1	-1
b_1	1	-1	1	-1
b_2	1	-1	-1	1

Eq.60 nunc pote esser applicate sin difficultate. Como exemplo, pro

$$F = \Delta y_1$$

nos ha

$$s_1(a_1) = \sum_R X(R)\, R\Delta y_1/4$$

$$= (\Delta y_1 + \Delta y_2 + \Delta y_2 + \Delta y_1)/4$$

e per normalisar con respecto al coordinatas interne,

$$s_1(a_1) = (\Delta y_1 + \Delta y_2)\, 2^{-\frac{1}{2}}.$$

Le coordinatas de symmetria normalisate que resulta es date in Tabula VIII. Le

TABULA VIII. Coordinatas de symmetria normalisate pro le molecula non-linear XY_2.

Coordinata generative F	Coordinata de symmetria normalisate
Δy_1	$s_1(a_1) = 2^{-\frac{1}{2}}(\Delta y_1 + \Delta y_2)$
$\Delta y_1 y_2$	$s_2(a_1) = \Delta y_1 y_2$
Δy_1	$s_1(a_2) = 2^{-\frac{1}{2}}(\Delta y_1 - \Delta y_2)$

representation irreducibile es scribite in parentheses plus tosto que como superindice. Naturalmente il non ha un secunde subindice proque omne le representationes irreducibile es unidimensional, como mentionate supra.

4.32 Coordinatas de Symmetria pro le Molecula Tetrahedric CX_3Y. Nos considera in iste section le molecula tetrahedric CX_3Y monstrate in Fig. 3 de section 3.23. Le transformationes del coordinatas interne sub le operationes del gruppo C_{3v} al qual le molecula pertine es date in Tabula IX.

Le representationes irreducibile del gruppo C_{3v} es date in Tabula X. Le representationes unidimensional es simplemente le characteres. Le representation irreducibile bidimensional pote esser obtenite facilemente per studiar le proprietates de transformation de duo vectores orthonormal in un plano que es perpendicular al axe del molecula.

Eq. 60 pote esser applicate de nove a iste problema. In le caso del representation bidimensional, quando un coordinata de symmetria ha essite obtenite per le application de iste equation, Eq. 57 pote esser usate pro obtener le coordinata de symmetria relatate (le coordinata partenari). Le resultatos es date in Tabula XI.

TABULA IX. Transformationes del coordinatas interne del molecula CX_3Y per le operationes de coperir del gruppo C_{3v}.

	I	C_3	C_3^2	σ_1	σ_2	σ_3
Δy	Δy	Δy	Δy	Δy	Δy	Δy
Δx_1	Δx_1	Δx_2	Δx_3	Δx_1	Δx_3	Δx_2
Δx_2	Δx_2	Δx_3	Δx_1	Δx_3	Δx_2	Δx_1
Δx_3	Δx_3	Δx_1	Δx_2	Δx_2	Δx_1	Δx_3
$\Delta x_1 y$	$\Delta x_1 y$	$\Delta x_2 y$	$\Delta x_3 y$	$\Delta x_1 y$	$\Delta x_3 y$	$\Delta x_2 y$
$\Delta x_2 y$	$\Delta x_2 y$	$\Delta x_3 y$	$\Delta x_1 y$	$\Delta x_3 y$	$\Delta x_2 y$	$\Delta x_1 y$
$\Delta x_3 y$	$\Delta x_3 y$	$\Delta x_1 y$	$\Delta x_2 y$	$\Delta x_2 y$	$\Delta x_1 y$	$\Delta x_3 y$
$\Delta x_1 x_2$	$\Delta x_1 x_2$	$\Delta x_2 x_3$	$\Delta x_3 x_1$	$\Delta x_1 x_3$	$\Delta x_3 x_2$	$\Delta x_1 x_2$
$\Delta x_2 x_3$	$\Delta x_2 x_3$	$\Delta x_3 x_1$	$\Delta x_1 x_2$	$\Delta x_2 x_3$	$\Delta x_2 x_1$	$\Delta x_1 x_3$
$\Delta x_3 x_1$	$\Delta x_3 x_1$	$\Delta x_1 x_2$	$\Delta x_2 x_3$	$\Delta x_2 x_1$	$\Delta x_3 x_1$	$\Delta x_3 x_2$

TABULA X. Le representationes irreducibile del gruppo punctal C_{3v}.

	I	C_3	C_3^2	σ_1	σ_2	σ_3
a_1	1	1	1	1	1	1
a_2	1	1	1	-1	-1	-1
e	$\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$	$\begin{pmatrix} -\frac{1}{2} & -\frac{1}{2}3^{\frac{1}{2}} \\ \frac{1}{2}3^{\frac{1}{2}} & -\frac{1}{2} \end{pmatrix}$	$\begin{pmatrix} -\frac{1}{2} & \frac{1}{2}3^{\frac{1}{2}} \\ -\frac{1}{2}3^{\frac{1}{2}} & -\frac{1}{2} \end{pmatrix}$	$\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$	$\begin{pmatrix} -\frac{1}{2} & -\frac{1}{2}3^{\frac{1}{2}} \\ -\frac{1}{2}3^{\frac{1}{2}} & \frac{1}{2} \end{pmatrix}$	$\begin{pmatrix} -\frac{1}{2} & \frac{1}{2}3^{\frac{1}{2}} \\ \frac{1}{2}3^{\frac{1}{2}} & \frac{1}{2} \end{pmatrix}$

TABULA XI. Coordinatas de symmetria normalisate pro le molecula tetrahedric CX_3Y.

F (Coordinata generative)	Coordinata de symmetria normalisate
Δy	$s_1(a_1) = \Delta y$
Δx_1	$s_2(a_1) = 3^{-\frac{1}{2}}(\Delta x_1 + \Delta x_2 + \Delta x_3)$
$\Delta x_1 y$	$s_3(a_1) = 3^{-\frac{1}{2}}(\Delta x_1 y + \Delta x_2 y + \Delta x_3 y)$
$\Delta x_1 x_2$	$s_4(a_1) = 3^{-\frac{1}{2}}(\Delta x_1 x_2 + \Delta x_2 x_3 + \Delta x_3 x_1)$
Δx_1	$s_{11}(e) = 6^{-\frac{1}{2}}(2\Delta x_1 - \Delta x_2 - \Delta x_3)$
	$s_{12}(e) = 2^{-\frac{1}{2}}(\Delta x_2 - \Delta x_3)$
$\Delta x_1 y$	$s_{21}(e) = 6^{-\frac{1}{2}}(2\Delta x_1 y - \Delta x_2 y - \Delta x_3 y)$
	$s_{22}(e) = 2^{-\frac{1}{2}}(\Delta x_2 y - \Delta x_3 y)$
$\Delta x_1 x_2$	$s_{31}(e) = 6^{-\frac{1}{2}}(2\Delta x_2 x_3 - \Delta x_1 x_2 - \Delta x_3 x_1)$
	$s_{32}(e) = 2^{-\frac{1}{2}}(\Delta x_3 x_1 - \Delta x_1 x_2)$

INSTITUTO DE SPECTROSCOPIA

IE UNIVERSITATE Fisk va convocar su 5te Instituto Annual de Spectroscopia Infrarubie durante le septimana del 30 de augusto al 3 de septembre 1954. Le institutos infrarubie Fisk es planate pro introducer chimistas, biologos, physicos, e ingenieros al usabilitate del spectroscopia infrarubie in recerca e instruction. Iste estate emphase particular essera placiate super le application del spectroscopia Raman e infrarubie al problemas de recerca industrial.

Sessiones in le matinos essera dedicate a discursos introductori, vesperas a discursos plus avantiate, e postmeridies a activitates laboratorial. Le facilitates laboratorial includera un varietate de spectrometros con passages e singule e duple, e de construction e universitari e commercial. Instrumentos pro le region de harmonicos (1 - 3 μ) tanto como pro le region de sal de rocca (3 - 15 μ) essera disponibile. Un portion special del programma essera un discussion super le meritos del spectrometros que nunc es commercialmente disponibile.

Le facultate includera: Dr. Walter Brown, TVA Research Laboratories, Wilson

Dam, Alabama; Dr. Ivar Cooke, Universitate Geneva, Switza, qui es nunc al Universitate Fisk; Dr. Nelson Fuson, Universitate Fisk; Dr. Ernest A. Jones, Universitate Vanderbilt; Dr. Wilber Kaye, Tennessee Eastman Corporation Research Laboratory, Kingsport, Tennessee; e Dr. James R. Lawson, Tennessee A and I University, Nashville, Tennessee.

Plus informationes, tanto como formularios de application, pote esser obtenite ab Nelson Fuson, Instituto de Spectroscopia Infrarubie, Universitate Fisk, Nashville, Tennessee, Statos Unite.

LE SPECTRO VIBRATIONAL E LE STRUCTURA DEL CHLORIDO DE NITRYLO

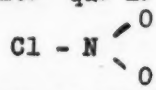
UN INVESTIGATION del spectro infrarubie de NO_2Cl gasose e le spectro Raman del liquido resulta in le sequente assignation del fundamentales:

$$\nu_1(a_1) = 1293, \quad \nu_2(a_1) = 794,$$

$$\nu_3(a_1) = 651, \quad \nu_4(b_1) = 1685,$$

$$\nu_5(b_1) = 367, \quad \nu_6(b_2) = 411 \text{ K}.$$

Le implicationes structural del datos es discutite in un articulo plus extendite que ha essite submittite al J. Chem. Phys. e il es concludite que le structura es



Nonobstante, il non es possibile dicer si le structura es planar o pyramidal.

RAYMOND RYASON
M. KENT WILSON
Laboratorio Chimic Mallinckrodt
Universitate Harvard
Cambridge, Massachusetts, Statos Unite

LIBRO

Molecular Theory of Gases and Liquids. Per J. O. Hirschfelder, C. F. Curtiss, e R. B. Bird. John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Maio 1954. 1219 paginas, precio $20.00.

Un studio intense del mechanica statistic in su applicaion a gases e liquidos, iste volumine tracta le thema sub tres divisiones principal: Proprietates Equilibristic, Proprietates Non-equilibristic, e Fortias Intermolecular. Le prime de iste sectiones comencia con un revista del mechanica statistic equilibristic, le qual servi como base pro le disveloppamento theoric del equation de stato.

Parte II coperi le mechanica statistic non-equilibristic e le theoria del phenomenos de transporto. Concludente iste section il ha un capitulo super applicationes hydrodynamic le qual contine un discussion del propagation de undas de sono, flammas, e detonationes.

In le section final, le autores discute le theoria de mechanica quantic e electromagnetic del fortias inter moleculas, atomos, iones, e radicales. Illes compara le calculationes a priori del mechanica quantic pro le fortias intermolecular con le informationes obtenite in le prime duo partes per le analyse del datos experimental super le proprietates macroscopic.

MISCELLANEA

Spectroscopistas itinerari: Dr. M. Kent Wilson del Universitate Harvard va in septembre al King's College in London pro un anno de recerca in le laboratorio de W. C. Price... Dr. Gilbert Amat del Universitate Paris arrivava in junio al Universitate Ohio State pro un anno de recerca con professor H. H. Nielsen... Dr. D. F. Hornig del Universitate Brown va in septembre pro un anno a transverso le Atlantico ... Drs. S. C. Sirkar del "Indian Association for the Cultivation of Science," Calcutta, e Dr. P. G. Piranik del Universitate Osmania in Hyderabad, India, va junger se in septembre con le gruppo recercic in le laboratorio de spectroscopia al Instituto Technologic de Illinois in Chicago. Dr. Piranik va remaner un anno, Dr. Sirkar solemente tres menses... Le mesme laboratorio albergara durante le estate de 1954 Dr. H. P. Stephenson del Universitate Illinois Wesleyan de Bloomington, Illinois.

Appunctamentos e Promotiones. Al Instituto Technologic de Illinois, Dr. Pasquale Porcelli ha essite appunctate como In-

structor de Mathematica e Dr. Salvador M. Ferigle ha essite promovite ab Instructor de Physica a Professor Assistente de Physica... Al Universitate De Paul in Chicago, Dr. Joseph S. Ziomek ha essite promovite ab Instructor de Chimia a Professor Assistente de Chimia.

Labor Spectroscopic a Cambridge. Le numero de junio 1954 del British Bulletin of Spectroscopy (disponibile ab W. H. Storey, 56 Arbury Road, Cambridge, Anglaterra) contine un articulo interessante super le labor spectroscopic in le Departimento de Scientia Colloidal al Universitate Cambridge. Iste labor es super spectroscopia infrarubie e Raman e es dirigite per Dr. N. Shepard. Dr. D. M. Simpson de Newnham College etiam es associate con le labor. Le articulo describe le equipamento e le natura del recerca de iste laboratorio.

Traductiones Russe. Listas numero 7 e 8 de Bibliography of Translations from Russian Scientific and Technical Literature nunc es disponibile ab le Card Division, Library of Congress, Washington 25, D. C. a un precio de 25 cents per cata un.

UN BANDA DE ABSORPTION CHARACTERISTIC DEL GRUPPO DE ISOCYANATO NCO

PER UN studio del spectro infrarubie de octo isocyanatos, W. H. T. Davison ha monstrate que un banda multo intense a 2269 e 6 K es characteristic del gruppo de isocyanato NCO. Plus detalios es date in J. Chem. Soc. 3712-3713, 1953.

SPECTRO INFRARUBIE DEL GRUPPO DE AMIDO

LE BANDA multo intense a 1560 K in le spectro infrarubie de compositos que contine le gruppo de amido N-substituite esseva assignate como δ(N-H) per R. E. Richards e H. W. Thompson[1], sed como ν(C-N) per H. Lenormant[2]. Recentemente, H. Letaw, Jr. e A. H. Gropp[3] ha investigate le cambiamentos in frequentia de iste e altere bandas in le spectros infrarubie de plure ethanamidos de N-butylo e N,N-dibutylo quando Cl o F esseva substituite in le position 2. Illes conclude que le assignation del banda a 1560 K como ν(C-N) es correcte. Le absentia apparente del banda correspondente in le spectro del gruppo de amido N,N-disubstituite es explicate per le degeneration accidental de ν(C=O) e ν(C-N).

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[1] J. Chem. Soc. (London) 1248 (1947).
[2] Ann. chim. 5, 459 (1950).
[3] J. Chem. Phys. 21, 1621 (1953).

ACCESSORIO A DUPLE FASCE

ES POSSIBILE construer un simple accessorio bifacial pro un spectrometro infrarubie unifascial (le modello 12C de Perkin-Elmer) a parve costo como describite per N. H. E. Ahlers e H. P. Freedman.[1] Nulle modification optic es necessari. Cellulas rotatori es usate.

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[1] Nature, 172, 260 (1953).

STATISTICAS VITAL

Numero de contributiones durante le mense passate 11
Distribution: 500 exemplares a 26 paises.
Costo de un numero de 5 paginas per lector per anno $2.00
Contributiones usque nunc per lector per anno $1.02
Numero de exemplares del monographia, "Regulas de Selection pro Spectros Vibrational de Moleculas Polyatomic" vendite usque nunc 59
Presente numero de membros del Societate Del Spectroscopistas Molecular . . . 12

SOCIETATE DEL SPECTROSCOPISTAS MOLECULAR

Un nove membro de iste societate es:

12 (8-VI-54). Pierre Charles Tarte, Instituto de Chimia, Universite Liége, Avenue des Coteaux 8, Grivegnee, Liége, Belgica.

Altere spectroscopistas qui desira devenir membros debe retornar le formulario de application (pagina 19a), o scriber a:

Le Redactor, Spectroscopia Molecular
Cassa Postal 58
Instituto Technologic de Illinois
Chicago 16, Illinois, Statos Unite.

CALENDARIO DE EVENTOS SPECTROSCOPIC

Augusto 30-September 3. 5te Colloquio International super Spectroscopia, Gmunden, in Austria Superior. Spectroscopia emissionic e molecular. Prof. F. X. Mayer, Chef. (J. R. Stansfield, Hilger and Watts, Ltd., 98 St. Pancras Way, London, N.W. 1, Anglaterra.)

September 3-7. Symposio International super Spectroscopia Infrarubie, Parma, Italia. Centenario de Macedonio Melloni (1798-1854). (G. Polvani, Via Saldini 50, Milano, Italia.)

Septembre 20-21. Symposio super Spectroscopia Applicate Emissionic. Mines Branch, Dept. of Mines and Technical Surveys, Ottawa, Canada. (J. K. Hurvitz, Mines Branch, Dept. of Mines and Technical Surveys, Ottawa, Canada.)

Octobre 28-29. Conferentia super Spectroscopia Molecular. Institution of Electrical Engineers, Savoy Place, London, W. C. 2. Infrarubie, Raman, e ultraviolette, con emphase super le plus nove technicas. (Institute of Petroleum, 26 Portland Place, London, W. 1, Anglaterra.)

Novembre 17-18. Symposio "Direct Reading". Boston, Massachusetts, Statos Unite. (Baird Associates, 33 University Road, Cambridge, Mass., Statos Unite.)

Februario 28. Symposio Infrarubie in Pittsburgh, Pennsylvania, Statos Unite. (Baird Associates, le mesme adresse.)

Feb. 28 - Martio 4. Conferentia super Spectroscopia Applicate in Pittsburgh.

Maio 26-27. Societate pro Spectroscopia Applicate, 10me symposio annual e exhibition. New York.

Junio 13-17. 10me Symposio Annual super Spectroscopia e Structura Molecular. Columbus. (H. H. Nielsen, Departimento de Physica, Universitate Ohio State, Columbus 10, Ohio, Statos Unite.)

LARGOR DE LINEAS ROTATIONAL

CON UN specialmente construite spectroscopio microundic, H. Feeny, H. Lackner, P. Moser, e W. V. Smith ha mesurate le largor del linea J = 1-2 de OCS ab 195 a 476 ^{o}K. In iste region le largor varia como $T^{-0.9}$. Altere moleculas linear va esser investigate. (J. Chem. Phys. 22, 79 (1954).

SPECTROSCOPIA MOLECULAR es redigite e publicate mensualmente in interlingua per professor Forrest F. Cleveland del Laboratorio de Spectroscopia, Instituto Technologic de Illinois, Chicago 16, Illinois, Statos Unite. Manuscriptos pro publication debe esser submittite a ille adresse.

Le texto original es legite per Dr. Alexander Gode, Chef del Division de Interlingua de Science Service (80 East 11th Street, New York 3, N. Y.). Libros importante super interlingua, disponibile ab ille adresse, es Interlingua-English Dictionary, Interlingua Grammar, e Interlingua A Prime Vista.

Labor editorial es gratis. Le costo de preparation e distribution es recipite ab le spectroscopistas, bibliothecas, e companias. Le directores de publication es senioretta Ruth Grining e senior Fred L. Voelz.

. . . . . .

(Face cheques pagabile a Spectroscopia Molecular; posta al supra-date adresse)

☐ Io include $2.00 pro Spectroscopia Molecular pro 1954, e $____ additional pro le disveloppamento plus rapide de illo.

☐ Io include $2.00 pro le numeros del anno 1952 o 1953; o $4.00 pro 1952 e 1953.

☐ Io include $0.75 pro Regulas de Selection pro Spectros Vibrational de Moleculas Polyatomic; 1953, 25 paginas.

☐ Io include $____ e 500 exemplares de un pagina de information re nostre productos pro attachamento al sequente numero. (Traduction in interlingua, si desirate, gratis per Science Service.)

☐ Adde mi nomine al lista de membros del Societate Del Spectroscopistas Molecular.

☐ Io include $_____ como contributon voluntari al expensas de iste societate.

Nomine:

Adresse: . . . . . .

THE PERKIN-ELMER

INSTRUMENT DIGEST

A condensation of some articles in the Winter issue of THE PERKIN-ELMER *INSTRUMENT NEWS*, a publication of The Perkin-Elmer Corporation, manufacturers of scientific instruments—Infrared Spectrometers, Tiselius Electrophoresis Apparatus, Monochromators, Flame Photometers, Continuous Infrared Analyzers, Amplifiers, Astronomical Equipment, Thermocouples, Lenses, Crystal Optics, Special Designs for the Government.

For further information, write The Perkin-Elmer Corp., Norwalk, Conn. Regional Offices: New Orleans, Chicago and Washington, D. C.

Norwalk, Conn. August, 1954 Vol. 5, No. 2

New Evaluation Program Permits On-the-Spot Trial of Infrared Analysis

Perkin-Elmer has a new "Infrared Evaluation Program" which permits the laboratory to try infrared analysis, as follows:

1. A Model 12-C Infrared Spectrometer will be installed in the laboratory for a 90-day trial period.

2. An experienced spectroscopist will instruct personnel in the operation of the instrument. He will also help set up the specific analyses of interest to the laboratory. Contact will be maintained during the trial period.

3. At the end of the trial period, the organization may purchase the Model 12-C, rent it for an additional trial period, purchase a different model, or, if the trial period is unsuccessful, return the Model 12-C to Perkin-Elmer.

The cost of the program is $450.00 with $200.00 being credited if the instrument is purchased. The new lower-price schedule of the Model 12-C makes the program especially attractive. A Model 12-C may also be rented for $275.00 per month with a portion creditable toward purchase.

All interested in the "Infrared Evaluation Program" are invited to write for further information.

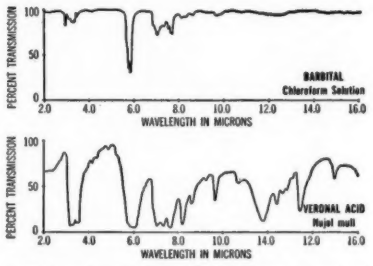
BARBITURATE CHARACTERIZATION BY INFRARED SPECTROSCOPY

by Leo Levi and Charles E. Hubley

Because of their close structural relationship no simple, efficient chemical method of analyzing barbiturates has yet been devised. Infrared spectroscopy is one of the few physical methods which proved to be both expedient and specific.

The present authors found that these compounds all exhibit characteristic bands over the entire fingerprint region when examined as Nujol mulls. Spectra, right, which compare the spectrum of veronal in chloroform and in Nujol, illustrate this point. Both spectra show characteristic N-H and C-H stretching vibration frequencies from about 3-3.6μ and display strong carbonyl absorptions near 6μ. They also exhibit marked C-H bending vibrations from approximately 7.0-7.4μ.

We have found the Nujol spectra of these compounds extremely useful for the identification and characterization of addiction-producing drugs seized by the Royal Canadian Mounted Police. These spectra also proved of great help in determining these compounds in commercial preparations obtained through food and drug inspectors of the Department of National Health and Welfare.



The absorption spectra recorded in this communication were chosen from a collection of IR-data on addiction producing drugs, now being processed as key sort cards by the National Bureau of Standards, for incorporation into their permanent reference catalogue.

Digest of an article appearing in the Winter, 1954 issue of INSTRUMENT NEWS.

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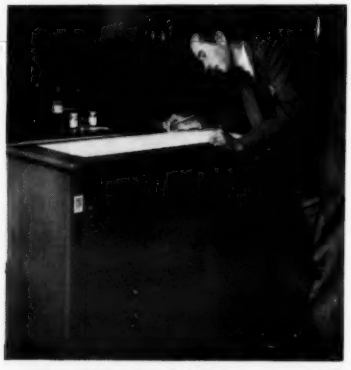

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